Introduction to two-step equations

1 Form and solve an equation to find the unknown value in each bar model.
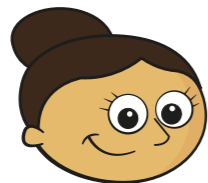
a)

52	
y	37

$y = $ ⬚

b)

104			
m	m	m	m
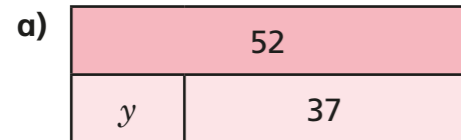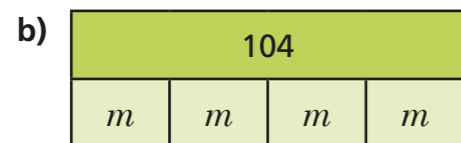
$m = $ ⬚

2 Dora is solving the equation $k + 8 = 3$

> $8 - 3 = 5$
> so $k = 5$

What mistake has Dora made?

What is the correct value of k? ⬚

3 Solve the equations.

a) $d + 12 = 20$

$d = $ ⬚

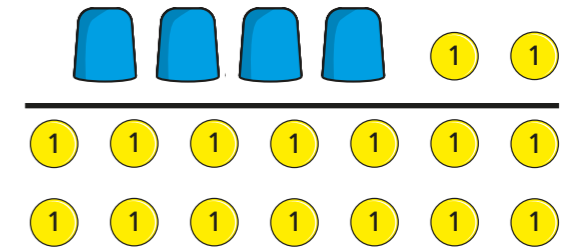**b)** $10 + x = 4$

$x = $ ⬚

c) $3m = -24$

$m = $ ⬚

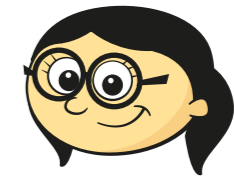**d)** $17 = 5n$

$n = $ ⬚

4 4 cups each contain the same number of counters.

There are 2 counters left over.

There are 14 counters altogether.

a)

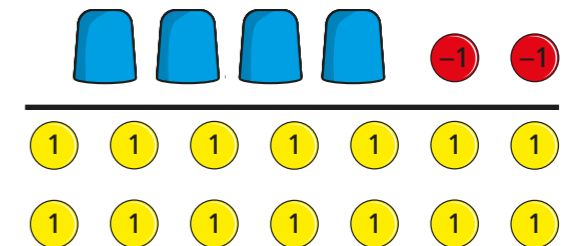> I can represent this using the equation $4x + 2 = 14$

Is Annie correct? _____

Talk to a partner about your reasons.

b) Solve the equation $4x + 2 = 14$

Show each step of your workings.

⬚
⬚

c) How many counters are in each cup?

5 Dexter represents the equation $4x - 2 = 14$ using cups and counters.

a)

> I can use zero pairs to help me solve this.

Talk to a partner about why Dexter thinks this.

b) Solve the equation $4x - 2 = 14$

Show each step of your workings.

⬚

c) How many counters are in each cup?

⬚

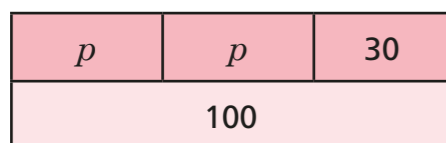**6** Huan is using algebra tiles to solve the equation $2x + 1 = 9$

x	x		1		1	1	1	1	1	1	1	1	1
x	x				1	1	1	1	1	1	1	1	
x					1	1	1	1					

$$2x + 1 = 9$$
$$-1 \qquad\qquad -1$$
$$2x = 8$$
$$\div 2 \qquad\qquad \div 2$$
$$x = 4$$

Use algebra tiles to solve the equations.

a) $3x + 1 = 10$ **c)** $3 + 2x = 15$ **e)** $3n + 7 = 1$

$x = $ ☐ $x = $ ☐ $n = $ ☐

b) $5x + 2 = 7$ **d)** $2y - 3 = 5$ **f)** $3k - 5 = 10$

$x = $ ☐ $y = $ ☐ $k = $ ☐

7 Esther draws a bar model to solve the equation $2p + 30 = 100$

p	p	30
100		

Solve Esther's equation. $p = $ ☐

8 Draw a bar model to illustrate $75 + 3y = 102$

What is the value of y? ☐

9 Scott and Nijah are solving the equation $3k - 2 = 11$

Scott's workings

$$3k - 2 = 11$$
$$3k = 11 - 2$$
$$3k = 9$$
$$k = 3$$

Nijah's workings

$$3k - 2 = 11$$
$$3k = 11 + 2$$
$$3k = 13$$

a) What mistake has Scott made?

_____

_____

b) Nijah says you cannot solve the equation, as 13 is not in the 3 times-table.

Is Nijah correct? _____

Explain your answer.

_____

_____

10 Solve the equations.

a) $8w + 2 = 19$ **c)** $5p + 9 = 5$

$w = $ ☐ $p = $ ☐

b) $5g - 2 = 11$ **d)** $6g - 10 = -3$

$g = $ ☐ $g = $ ☐